QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of a pilot**
TITLE OF COURT:	Coroners Court
JURISDICTION:	BRISBANE
DATE:	18/06/2024
FILE NO(s):	2022/3013
FINDINGS OF:	Carol Lee, Coroner
CATCHWORDS:	CORONERS: Aviation- Recreational Flying- Drifters- Low Level Flying- Alcohol and Drugs- Non-Compliance with Regulatory Framework.

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Background

The pilot was born in a regional town in Queensland on 27 February 1957 and died on 26 June 2022 at a surrounding regional area (incident location).

Queensland Police Service (Police) reported the pilot's death to the Coroner because his death appeared to be a violent or unnatural death and fell within the definition of a reportable death in the *Coroners Act* 2003. The matter was investigated by the Deputy State Coroner until I took over the carriage of the matter in February 2024.

The role of a Coroner is to investigate reportable deaths to establish, if possible, the cause of death and how the person died. The purpose of a coronial investigation is to establish the facts, not to cast blame or determine criminal or civil liability.

Circumstances

The pilot was a 65-year-old man who resided in a small regional township in rural Queensland with his spouse. His medical history was significant for Chronic Obstructive Pulmonary Disease (COPD) secondary to previous smoking, benign adrenal lesions, GOUT and diverticular disease. He was prescribed fluticasone furoate/vilanterol combination inhaler for long-term management of his COPD.

On the morning of Sunday 26 June 2022, the pilot was the sole occupant of a Drifter light aircraft ID# (Drifter), embarking on a recreational flight from his private airstrip at a small town near the incident location and landing at another small town's airfield for lunch with friends at the local hotel. After lunch he left the town for the return flight and was flying over a property heading in a northerly direction a few kilometres short of the landing strip, when he was seen by a witness who was working on that property flying low. The witness heard the "*zap*" of power lines being struck, then saw the Drifter suddenly go into a sharp upward motion before rotating and dropping straight to the ground, landing on its roof. He immediately attended the scene and saw broken live wires over the Drifter. He kept calling out to the pilot but got no response. Emergency Services were contacted. Police, Queensland Ambulance Service (QAS) and Queensland Fire and Emergency Service officers attended the scene.

From a distance, first responders could see the Drifter on it's roof and the pilot strapped into his seat upside down with his head buried into the soft muddy surface. Access was hampered due to the presence of live electrical wires. However, given the circumstances, the assessment was that it was extremely unlikely the pilot had survived the impact. The wires had been suspended about 15 metres above the ground between 2 poles about 150 metres apart. The wires ran in a East West direction, at 90 degress to the direction the Drifter was travelling in. Ergon Energy workers also attended the scene and once it was declared safe, emergency workers moved in and following assessment, officers from QAS declared the pilot Life Extinct at 16:28 hours.

Formal identification was confirmed at the scene.

The following authorities were notified on the day of the incident:

1. Australian Transport & Safety Bureau (ATSB).
2. Civil Aviation Safety Authority (CASA).
3. Recreational Aviation Australia (RAAus).

Autopsy

An autopsy was ordered and performed. It comprised an external and internal examination (to the extent an internal examination was required to determine the cause of death), imaging, document review and toxicology studies.

The opinion of the forensic pathologist as to the cause of death is based on consideration of the circumstances of death and an autopsy including associated imaging and testing.

The forensic pathologist summarised the findings at autopsy as follows:

1. CT scans showed thoracic injury with rib, sternal and thoracic spine fractures.
2. External post-mortem examination showed features of asphyxia, with abrupt transition of anterior lividity from the mid-chest upwards, a congested face, and petechial haemorrhages of the face, palpebral conjunctivae and the chest. There was no evidence of electrothermal-type injuries.
3. Internal post-mortem examination showed bruising of the anterior neck and mediastinum, as well as bilateral, anterior and lateral rib fractures, a fracture of the T5 vertebral body, and a mildly enlarged

heart with no evidence of acute or significant natural disease. There were no significant independently lethal traumatic injuries.

4. Histology of the lungs showed emphysematous changes consistent with the history of COPD. Fat emboli were seen in the lungs, in keeping with the known fractures. There was no significant acute natural disease.
5. Toxicological testing was performed on post-mortem samples of blood, urine and vitreous humour. The following substances were detected in the blood:
    a. A low level (0.024g/100mL) of alcohol. Similarly low levels of alcohol were found in urine (0.043g/100mL) and vitreous humour (0.028g/100mL). Whilst a degree of postmortem production of alcohol cannot be excluded, the presence of alcohol in three separate compartments is more in keeping with some degree of antemortem consumption, and possibly in the excretory phase of alcohol metabolism.
    b. A cannabis constituent.
    c. No other substances were detected on routine toxicological analysis. Specifically, the carbon monoxide level was below 5% haemoglobin saturation.
6. Biochemistry testing showed no significant biochemical derangement.

The forensic pathologist concluded by stating that this case demonstrated numerous features of traumatic asphyxia, from scene findings and postmortem examination. Traumatic asphyxia occurs when someone is unable to adequately breath secondary to external compression or injury. Death occurs due to a lack of inspired oxygen. The position of the deceased at the scene, trapped by the weight of the aircraft upside down and with his face pressed into the mud is strongly conducive to traumatic asphyxia. In addition, the congestion of the deceased's face and upper body, as well as the associated petechial haemorrhages are, whilst non-specific, also features of traumatic asphyxia. The findings of bruising in the anterior neck also indicate injury to the neck, in keeping with the position of the deceased's body at the scene.

There was no evidence of significant natural decease to account for death, nor were there independently lethal traumatic injuries identified, although there were fractures of the ribs and vertebral column. These fractures, in addition to the compression by the aircraft, would have likely further impaired respiration and are a component of the traumatic asphyxia.

In the opinion of the forensic pathologist, the cause of death was:

1(a) Traumatic asphyxia, *due to, or as a consequence of*

1(b) Light aircraft collision (pilot).

Investigation

Due to the nature of the incident, various agencies were involved in conducting investigations (jointly where at all possible, with information sharing), including the Forensic Crash Unit (FCU) and RAAus, with technical support from the ATSB.

The investigation was comprehensive and included but was not limited to scene inspection and analysis, witness interviews, GPS tracking devices and an EPIRB, other flight tracking data and analysis, CCTV footage, mechanical assessment of the wreckage, and assessing documentation informing on pilot qualifications and experience, health, aircraft history, maintenance and modifications, amongst other things.

Findings and opinions from these investigations were subsequently provided; the content of which is detailed below.

RAAus

RAAus is an Approved Self-Administering Aviation Organisation (ASAO) that is certified by CASA to administer a specific category of light aircraft. The primary functions RAAus conducts include the issuing of authorisations for instructors to conduct flight training, authorising pilots to act as pilot in command of an RAAus registered aircraft, registration (listing) of aircraft, and authorising people to maintain aircraft. Investigation of fatal accidents is not a requirement of *Civil Aviation Safety Regulation* (CASR) Part 149, nor does RAAus receive benefit or protections under the *Transport Safety Investigation Act 2003* (Cth) (TSIA). However, RAAus views its involvement, to the extent legally possible, to assist Police and Coroners to improve aviation safety.

Serious and fatal accidents of RAAus registered aircraft are not generally investigated by ATSB due to budgetary constraints and because it focuses its efforts elsewhere, as permitted under the TSIA. However, ATSB has a standing offer to provide technical assistance where requested and where resources permit. When ATSB does not investigate an aviation accident, responsibility devolves to the local state Police to perform these investigations.

In this context, RAAus undertook an Accident Review and completed its opinion on 23 August 2023, with the sole intention of preventing similar occurrences.

A summary of the relevant findings are as follows:

Background

1. The pilot had stayed overnight at a private airfield near the incident location on 25/26 June 2022. Shortly after another pilot's arrival at the airfield at 09:30 hours, the pilot took off in the Drifter and conducted a short 5–10-minute flight, whilst his pilot friend prepared another aircraft for flight. After landing, the Drifter required fuel, so the pilot drove to a nearby rural town to fill jerry cans which were then used to refuel the aircraft.
2. At approximately 11:10 hours, the pilot and his friend departed the private airfield in separate aircraft for the short flight to another small town's airfield. Flight data captured on the pilot's OzRunways Electronic Flight Bag (EFB) account commenced recording at 11:13 hours, approximately 1 nautical mile south-east of the airfield. The data shows that the Drifter initially climbed to approximately 600ft above ground level (AGL) before briefly descending as low as approximately 234ft AGL, and then ascended to a maximum altitude of approximately 2150ft AGL during the flight to the other small town. The pilot landed at the airfield at 11:40 hours.
3. At the airfield, the pilot travelled to the hotel with friends where they had lunch. He was observed drinking alcohol during this time. The pilot and his friend then made plans to make the return flight back to the private airfield, again, in separate aircraft.
4. The pilot departed first and his flight data re-commenced tracking at 13:48 hours, approximately 5 nautical miles north-west of the airfield. The Drifter initially climbed to an altitude of approximately 1100ft AGL tracking towards a nearby accommodation venue which has an airfield. As the Drifter approached the venue it descended below 500ft AGL, passing overhead the airfield at approximately 80ft AGL. The Drifter then tracked towards a property owned by another friend of the pilot's, who witnessed the Drifter fly overhead at an estimated height of 10-15m above the ground. This is consistent with flight data which shows the Drifter passed overhead the property at 60ft (18m). Shortly after, the Drifter was observed operating at low levels by a local farmer who reported paying more attention as the Drifter was flying a lot lower than expected. The farmer then observed the aircraft collide with powerlines and subsequently impact terrain at 14:13 hours. The incident site was located approximately 2 nautical miles south-west of the private airfield. [**Image 1].**

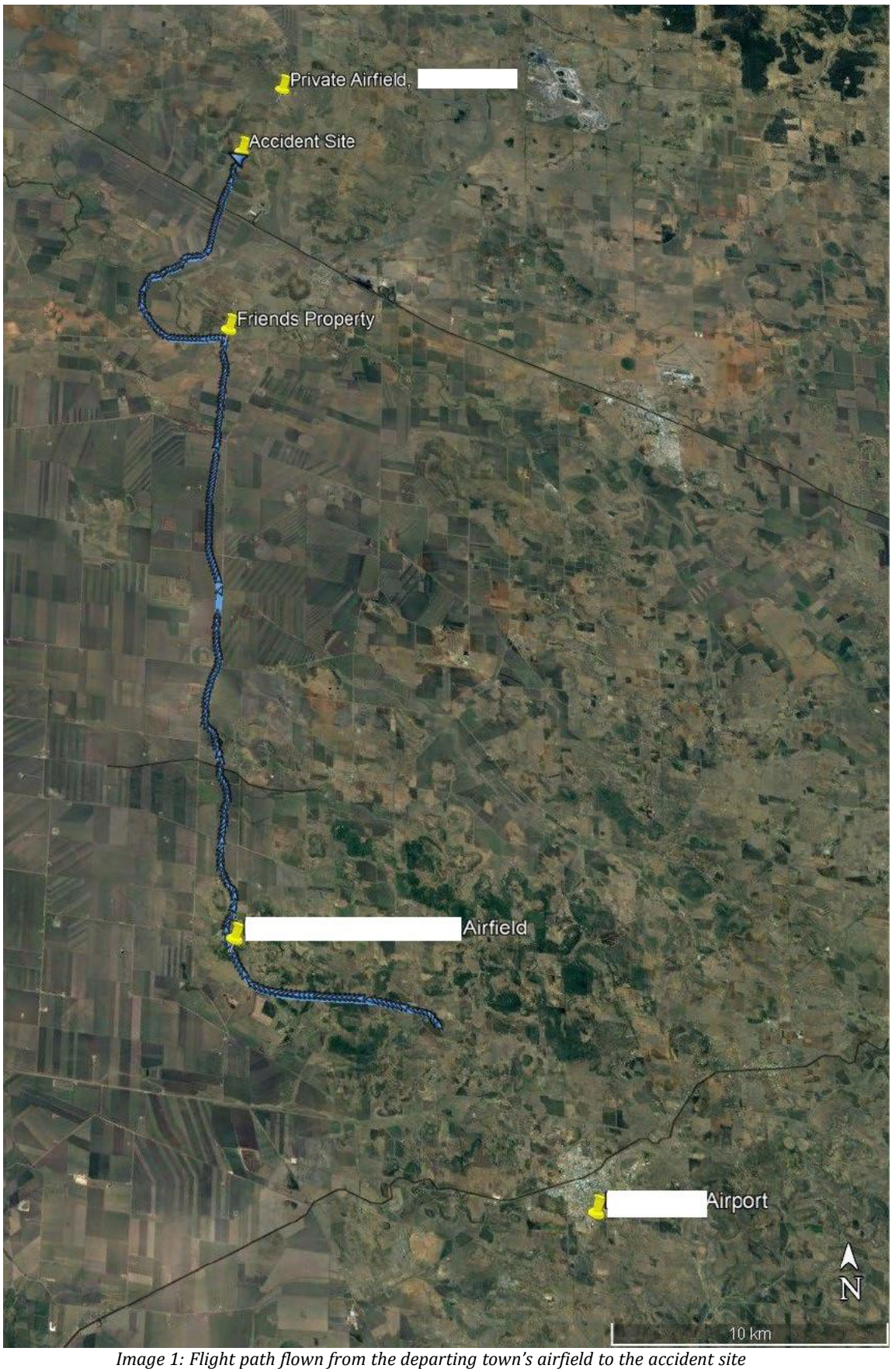

Image 1: Flight path flown from the departing town's airfield to the accident site (image source: OzRunways track data overlayed on Google Earth).

Pilot licensing/experience/currency

5. Records held by RAAus show the following information about the pilot:

a. He first obtained a Private Pilot Licence (PPL) issued by the CASA on 2 September 1988. He also held gliding qualifications with the Gliding Federation of Australia, including a Gliding Instructor authorisation.
b. He first became a member of RAAus on 22 May 1998 and was issued with a Recreational Pilot Certificate on 30 May 1998 as a converting pilot application based on previous aviation experience.
c. He held a Flying Membership and a current Biennial Flight review at the time of the incident and was appropriately qualified to operate the aircraft.
d. During the pilot's membership with RAAus, he owned four registered aircraft, as detailed in the table below:

Registration	Make	Model	Interest began	Interest ended
#	Austflight ULA	Drifter A-508	1 Aug 2013	20 Sept 2016
#	Rans	S-7	31 Aug 2016	24 Sept 2018
#	Vol Mediterrani	Esqual VM-1	19 Sept 2018	-
#	Austflight ULA	Drifter A-503	6 Sept 2021	-

e. RAAus was unable to obtain an up-to-date pilot logbook showing the pilot's total experience at the time of the incident, however, RAAus records show that he had in excess of 2500 hours as of 2018, including 556 hours flying ultralight aircraft. In addition to this, RAAus records show that the two aircraft owned by the pilot at the time of the incident recorded a total of 202 hours of flying in 2021.
f. OzRunways EFB flight tracking data obtained shows that the pilot flew regularly, with 11 flights recorded within June 2022. RAAus records do not show any previous accidents or incidents involving the pilot.

6. Based on the information at 5 above, pilot experience and currency were not considered to be factors in the incident.

Medical

7. The following information relates to pilot medical information:
    a. RAAus member's medical requirements vary based on the level of Certificate, Rating or Approval held. RAAus Flight Operations Manual Issue 7.1.1 (FOM) (current at the time of the incident). Section 2.16 provides RAAus medical requirements.
    b. If there are no nominated medical conditions, the holder of a Recreational Pilot Certificate with RAAus is required to provide a signed medical declaration stating their health standard is the equivalent to the requirements for a private motor vehicle driver license in Australia upon commencement of membership with the organisation. In addition to this stated requirement, all pilots must ensure through their own self-assessment that prior to flight they meet these requirements by referencing pertinent human factors such as fatigue, illness, stress, effects of medication or alcohol and dietary sustenance. This is often referred to as the IMSAFE check.[1].
    c. The pilot provided a signed medical declaration at the time of his last biennial flight review conducted on 23 October 2020. RAAus is not aware of any medical conditions held by him.
    d. The pilot was observed consuming alcohol with lunch at the hotel on the day of the incident. RAAus was not provided toxicology results, therefore, the blood alcohol content at the time of the accident is not known.
8. There is no evidence to suggest medical incapacitation to be a factor in this incident. It could not be determined whether the consumption of alcohol, as stated by a witness, impacted the pilot's fitness to fly at the time of the incident.

Aircraft

9. The following information relates to the aircraft used by the pilot at the time of the incident:
    a. The Austflight ULA A-503 Drifter is a high-wing, factory built, 3-axis controlled single engine aircraft with an open cockpit and tandem seating for two people. **[Image 2].**

[1] https://www.boldmethod.com/blog/lists/2019/09/im-safe-acronym/

Image 2: Photo of Austflight Drifter # (Photo source: RAAus records).

b. The aircraft had an empty weight of 266kg (as weighed in July 2021), and a maximum take-off weight (MTOW) permitted of 400kg. It was powered by a 2 stroke Rotax 582 engine in pusher configuration and was fitted with a three-blade Bolly propeller. Austflight Drifter # was built in 1988 and first registered with RAAus on 12 September 1988.
c. September 2018, the aircraft was purchased by the pilot and the information provided to RAAus indicated the aircraft was sold at that time in an unairworthy condition. The aircraft was re-registered with RAAus in the pilot's name in September 2021. Logbook entries show that the aircraft was rebuilt in August 2020. At this time the logbook showed that the aircraft had a total of 2703 hours and the engine had a total 309 hours. A condition report conducted in September 2021, prior to re-registration, reported that the aircraft was in good condition.

Maintenance

10. The following information relates to aircraft maintenance:
    a. Historical aircraft maintenance logbook was supplied by Police. However, this did not contain up to date maintenance information. Compliance with 100 hourly and/or annual inspection requirements was unable to be confirmed, as required in accordance with RAAus maintenance requirements outlined within the RAAus Technical Manual, version 4.1 (current at the time of the incident).
    b. Based on the lack of up-to-date maintenance records, maintenance compliance at the time of the incident could not be confirmed.
    c. Despite the lack of current maintenance records, there is no evidence to suggest aircraft maintenance to be a contributing factor in relation to this incident.

Mechanical inspection

11. RAAus did not attend the incident scene. However, it assessed witness statements and viewed scene photographs obtained by Police from the incident site.
12. An RAAus investigator, accompanied by an RAAus Chief Flying Instructor, undertook an inspection and assessment of the Drifter wreckage in a holding yard at a regional town on 5 July 2022. Several components of the flight and control systems were examined. Several items were seized for further examination by experts within RAAus and ATSB. Components of the engine were inspected with no signs of mechanical failure prior to impact with terrain. The propeller blades were correctly assembled and primarily intact, with one blade showing clear impact damage. Markings on all three blades were considered consistent with an impact at slow rotation speed. **[Image 3].**

Image 3: Propeller blade (Image source: Police Supplied).

13. Inspection of the wreckage confirmed that all primary control functions were operational and normal for elevator, rudder, and throttle. The elevator trim system was functional and found with slight forward trim, consistent with level cruise flight for this aircraft.
14. The right-hand aileron push rod was identified to have fractured at the male rod end connecting thread. Based on the information available, including witness statements of the aircraft path prior to the incident, it is considered most likely that this fracture occurred as a result of the wire strike and subsequent impact with terrain. **[Image 4].**

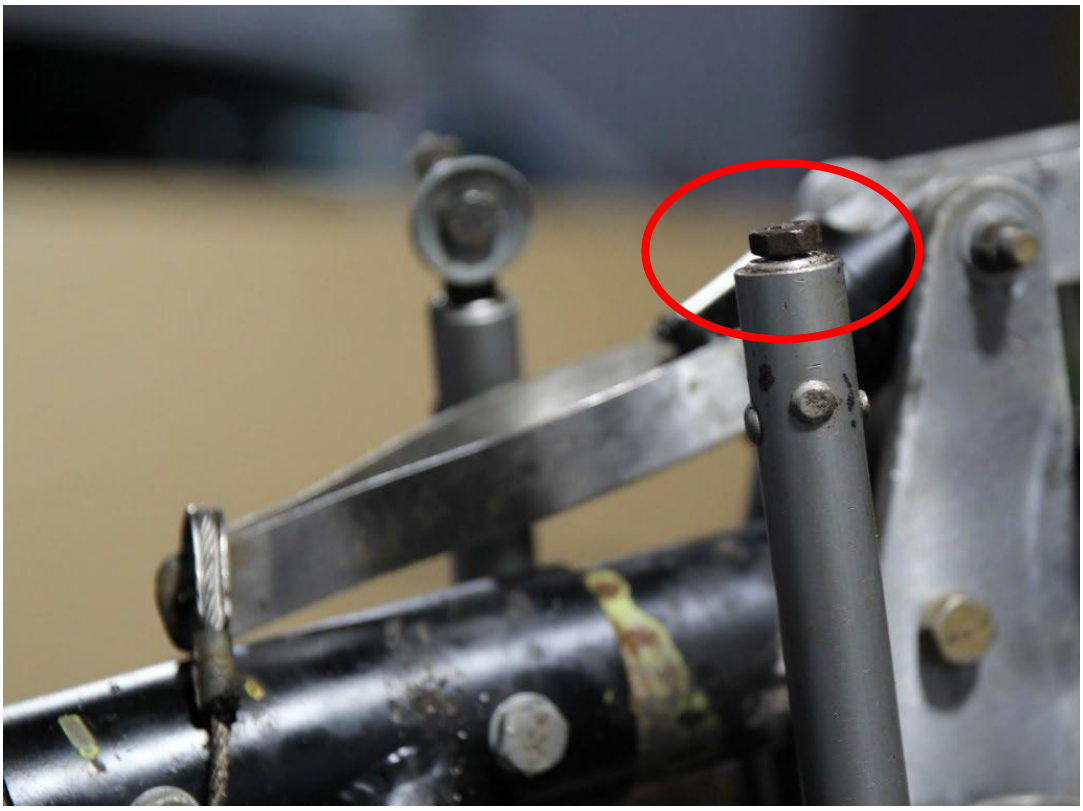

Image 4: Aileron push rod (Image source: Police supplied).

15. At the completion of the examination of the motor, it was found that fuel was present at all stages of the feed and combustion cycle and as such, was operating correctly at the time of the crash. Several minor mechanical issues were identified.

Modifications

16. Inspection of the wreckage and subsequent review of the aircraft information identified several unapproved modifications to the Drifter.

17. The aircraft had been fitted with a Rotax 582 engine which maintenance records show was fitted in February 2004. No approval had been provided to RAAus to confirm compliance for the fitment of this engine to the aircraft. The engine approved for fitment to the Austflight Drifter A-503 is a Rotax 503 engine. The aircraft had flown in excess of 1000 hours with the Rotax 582 engine fitment.
18. A 3-blade, Bolly Optima propeller system was fitted to the aircraft at the time of the incident. No approval for the fitment of this propeller was provided to RAAus, with the approved propellor for this aircraft being a 4-blade Aerofibre Industries Brolga propeller which was recorded as being fitted to the aircraft based on RAAus records.
19. In addition to these modifications, the aircraft choke system was also identified to have been disabled.
20. Despite the identification of non-compliant modifications conducted to the aircraft, these are not believed to have been a contributing factor in the incident.
21. Consequently, it was concluded that there was no evidence to suggest that mechanical failure or aircraft modifications were a contributing factor in this incident.

Weather

22. Weather conditions were suitable for flight on the day of the incident, with another pilot who flew the same route on the day commenting that winds were calm and "*the weather was brilliant for flying*".
23. Weather observations taken at the small town near the incident location at the time of the incident recorded windspeed of 6km/hour with gusts of 7km/hour.
24. Consequently, weather was not considered to be a factor in this incident.

Minimum Height Rules

25. The following observations were made:
    a. Civil Aviation Order (CAO) 95.55[2] paragraph 10.1 states that an aeroplane may only be flown at a height of less than 500 feet AGL if:
        i. the aeroplane is in the course of taking-off or landing; or
        ii. the aeroplane is flying over land that is owned by, or under the control of, the pilot; or
        iii. the owner or occupier (including the Crown) of land over which the aeroplane is flying, or an agent or employee of the owner or occupier, has given written permission for the flight to take place at such a height; or
        iv. the aeroplane's pilot is engaged in low-flying flight training:
            1. over a flying training area approved in writing by the operator conducting the training as suitable for low-flying activity; and
            2. the low-flying activity is conducted with the written permission of a person mentioned in subparagraph (c).
    b. Minimum height rules are also outlined within the CASR Part 91.267[3] – General operating and flight rules.
    c. In addition to the above requirements, the RAAus FOM requires that in order to operate as pilot in command and operate a recreational aeroplane below 500ft AGL, a pilot certificate holder must hold an RAAus Low Level (LL) endorsement.
    d. The pilot successfully carried out flight training and was issued with a LL endorsement by RAAus on 9 November 2012. However, he had not obtained landowner permission for the area flown during the flight. As such, the pilot was not approved to operate at low level (below 500ft AGL) for the route flown on the day of the incident.

Aircraft Flight Data

26. The following observations were made:
    a. Flight data was captured using the OzRunways EFB application running on the pilot's mobile device during the subject flight. A review of this data shows that the pilot conducted a majority of the incident flight below the minimum required altitude of 500ft (AGL), including the final 14 minutes of the flight up until the point of impact with powerlines.
    b. Flight data was provided to RAAus and Police in the form of .GPX files containing latitude, longitude, elevation (above sea level), and time[4]. From this data an online elevation tool was used to export the ground elevation at each position captured within the flight data to create an elevation profile of the aircraft above ground level (AGL). This precision of this information cannot be confirmed due to possible variation in the accuracy of both the data recorded from the pilot's mobile device, as well as variations in ground altitude data. This is confirmed with

[2] https://www.legislation.gov.au/Details/F2023C00050
[3] http://classic.austlii.edu.au/au/legis/cth/consol_reg/casr1998333/s91.267.html
[4] Facilitated by a request from the Queensland Deputy State Coroner to the South Australian State Coroner.

some data points showing an altitude below ground level during the final 8 minutes of the flight. Despite this, the data provides valuable information with respect to an overview of the general flight profile of the Drifter prior to the incident and is consistent with witness statements reporting the aircraft flying at very low altitude prior to the incident. **[Image 5].**

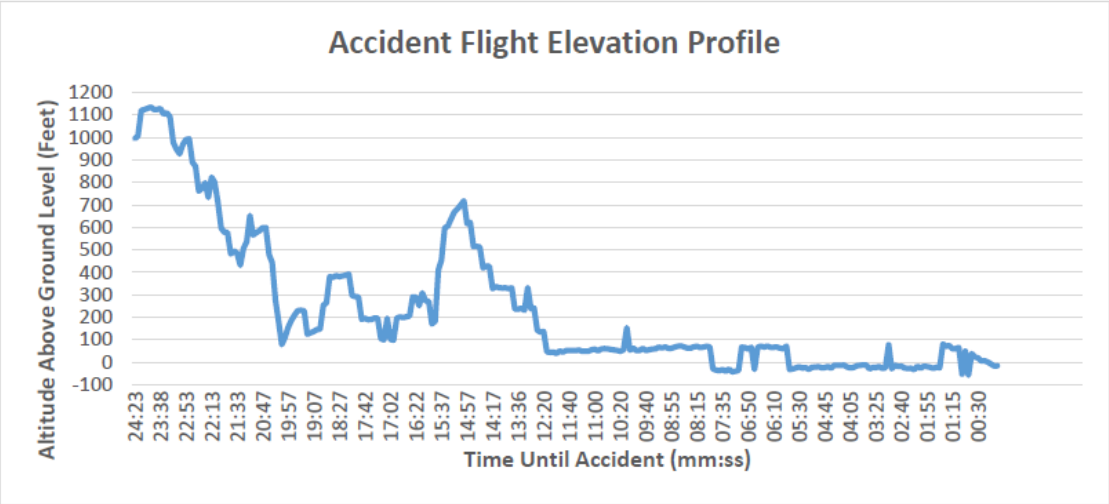

Image 5: Accident Flight Elevation Profile (Source: OzRunways flight data).

c. In addition to the altitude data recorded, flight path data further indicates that the pilot conducted the flight at low level. The track flown by him is observed to navigate around low level terrain which would not be reasonably expected to result in flight path deviation if the Drifter was operating at a normal flight altitude.

d. **Image 6** below shows the aircraft path deviating around a small hill which stands approximately 50m (164ft) higher than surrounding terrain. The Drifter flight data shows the aircraft to be operating 38m (125ft) AGL.

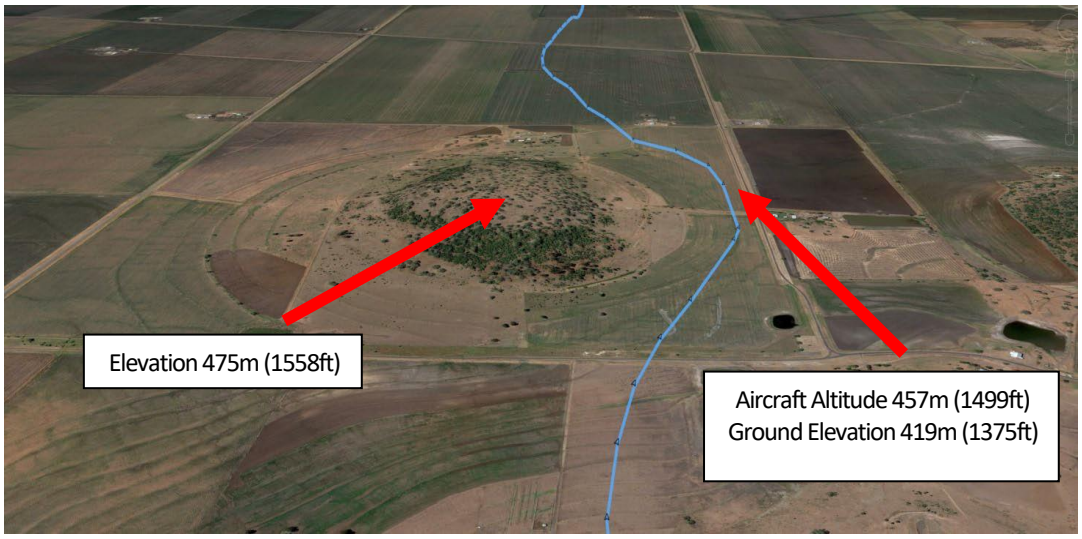

Image 6: Flight track showing navigation around low terrain. Measurements above sea level (Source: Google Maps).

Alcohol

27. CASR 91.520 (2)[5] states that:
    a. A crew member of an aircraft for a flight contravenes this sub regulation if*:*
        i. the crew member carries out a duty for the flight; and
        ii. either:
            1. the crew member consumes alcohol at any time during the period of 8 hours ending when the flight begins; or

[5] http://classic.austlii.edu.au/au/legis/cth/consol_reg/casr1998333/s91.520.html

2. if a test of a body sample of the crew member to determine the level of alcohol in the sample was taken at the time of carrying out the duty--the test would reveal that the permitted level for alcohol (within the meaning of Part 99) is exceeded.

28. Under CASA definitions, the permitted level for alcohol is less than 0.02 grams of alcohol in 210 litres of breath.
29. Based on witness statements that the pilot was observed drinking alcohol at lunch, immediately prior to flight, he was in breach of the CASR with respect to the consumption of alcohol prior to flight.

Summary

30. The following matters were considered to be contributing factors in the incident:
    a. During the return flight, the pilot operated at low-level, below the minimum permissible altitude for the flight, and subsequently impacted powerlines located on a private property approximately 2 nautical miles from the destination airfield.
31. Other factors that increased risk were identified as follows:
    a. The pilot was in breach of CASR pertaining to flight after the consumption of alcohol, based on a witness statement that he was observed consuming alcohol during lunch at the Hotel immediately prior to the flight. It was unable to be determined whether consumption of alcohol affected the safe conduct of the flight.
    b. Review of this incident identified unapproved modifications made to the Drifter. Whilst there is no evidence to suggest that these modifications were a contributing factor in this incident, unapproved modifications have the potential to negatively affect aviation safety.

Actions

32. Any safety outcomes determined as a result of accident investigations are provided in a de-identified format to RAAus members. RAAus notifies members of safety related issues or concerns in its magazine Sport Pilot, regular digital articles emailed to members, through advice to CFIs at its flight training schools, through regularly conducted professional development training sessions, on its website, open forums at fly-ins and other appropriate venues.
33. October has been designated RAAus National Safety Month for a number of years, focusing on providing members with articles and information regarding areas of safety concern identified through analysis of serious and fatal accidents. Safety Month is an annual initiative that RAAus uses to reinforce safety-based messages to members.
34. Ongoing monitoring of accidents and incidents is conducted by the RAAus Head of Safety using a purpose-built and customized Occurrence Management System (OMS). The OMS permits analysis of accidents and incidents by appropriately trained staff to determine safety related trends such as flight planning deficiencies, loss of control accidents, and fuel management.
35. Additionally, RAAus publications to members now include an enlarged and continued focus on ensuring its members receive appropriate safety messages regarding serious and fatal accidents and the actions necessary to avoid repetition.
36. Further, RAAus has instituted a number of education projects to raise member awareness of trending safety areas, called Recreational Aviation Advisory Publications (RAAP) which include a number of topics to date—ranging from Supervision Requirements for Instructors, (aircraft) Type Training guidance for members and Medical Assessment Guidance for members. These publications are available to members on the RAAus website www.raa.asn.au.
37. Under CASR Part 149 RAAus is required to develop and operationalise a safety management system (SMS) that aims to improve aviation safety, and this is to be under the control of a Safety Manager, which in RAAus' case is the Head of Safety. Occurrence management is a primary function of any SMS and involves trained and skilled personnel examining incidents and accidents in order to educate members so to minimise the likelihood of these occurring again.
38. An output of OMS analysis results in further education for members. RAAus has therefore established a Head of Training position to develop a range of training initiatives for new Pilot Certificate candidates, current pilots, and instructors. This position relies upon information extracted from RAAus OMS and accident statistics to develop safety training initiatives including online professional development for RAAus Instructors and pilots.
39. Hangar Talk presentations are available to CFIs and clubs around the country for delivery to RAAus members and provided on the RAAus YouTube channel for members to view. The subjects of these Hangar Talks are directly related to risk factors identified from analysis of serious and fatal accidents. Further, the intent of RAAus is to provide on-line and distance education learning opportunities and online videos, to members regarding theory subjects required for issue of a Pilot Certificate and issues of safety relevant to accidents.
40. RAAus has also committed to partnering with CASA and ATSB on delivery of safety messages common to all pilots.

FCU

Relevant aspects of the FCU findings and opinion received on 8 April 2024 are summarised as follows:

Aircraft

1. The aircraft involved was a Lockwood Drifter A-503 with tail number # and serial number #. This Drifter was built on 20 August 1988 and first registered with RAAus on 12 September 1988. Registration was current until 6 September 2023 and the registered owner was the pilot.
2. Drifters are a high wing, single engine aircraft in a pusher configuration. Drifters were first introduced in the 1980's. Multiple manufacturers have been licenced to build Drifters in Australia since introduction. Drifters are built around an aluminium tube keel, with aluminium tubing making up the keel-to-wing structure. There is no enclosed fuselage, and the seats are open to the air with a fibreglass nose. The wing is built from aluminium tubing and covered with a sailcloth envelope. This Drifter was configured for two occupants (in line) and is fitted with dual controls. When flown in single person configuration, the front seat is occupied to maintain weight distribution. Both seats were fitted with four-point safety harnesses. The Drifter was fitted with main (behind second seat) and auxiliary (under belly) fuel tanks. **[Image 7].**

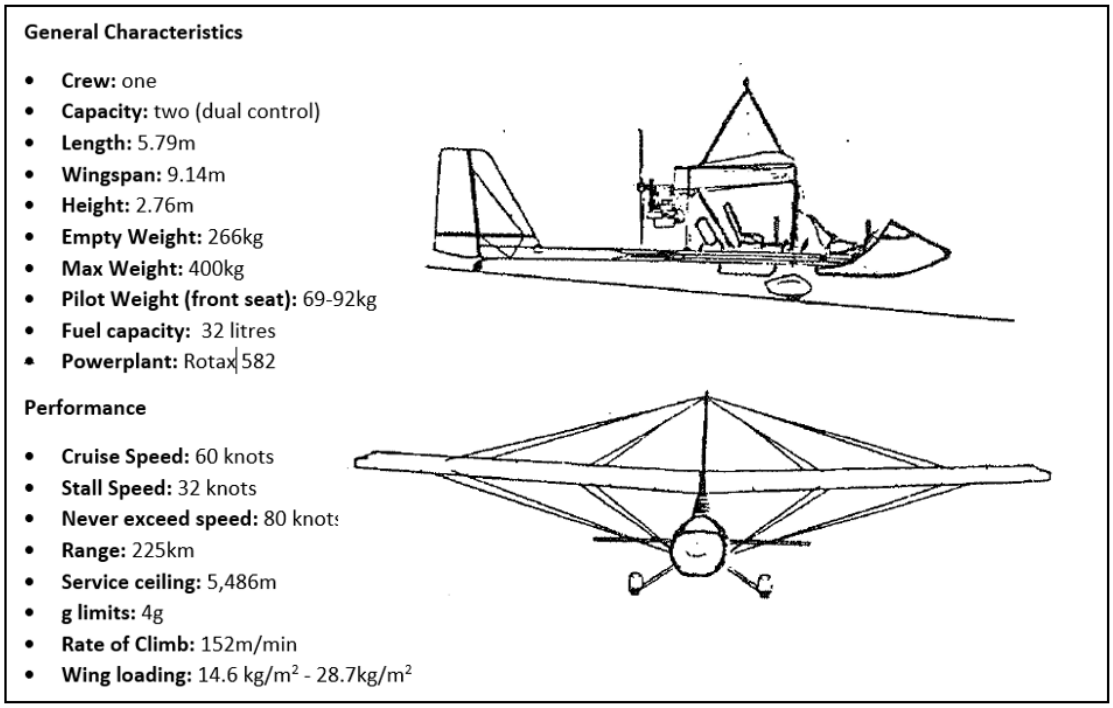

Image 7: Ausflight Drifter Characteristics.

3. A CASA Australian Flight Crew Licence (Pilots Licence) is not required to be a pilot in command due to the Drifter being RAAus registered. A RAAus Pilot Certificate and appropriate endorsement is required.

Scene

4. The scene of the incident was inspected on the day of the crash. The location is a rural farm of approximately 350 acres in size near the flight's originating town. The crash location is just north of the farmhouse and accessible via a gate on a road adjoining the incident location. On arrival, all emergency services were on scene and awaiting clearance from Ergon Energy prior to approaching the Drifter and attending to the pilot. Once Ergon Energy declared the scene safe, QAS immediately rendered aid to the pilot and detected no signs of life. The pilot was observed to be still wearing his four-point harness and aviation helmet. He was recovered from the Drifter and transported to JTC for examination.
5. The contour of the ground is a gradual decline away from the road (east to west) to a culvert before a sharp rise to a beam, presumably to control ground water. The ground at this location has low vegetation with no trees in the immediate vicinity of the crash site. At the time of the crash the ground

was wet and was composed of soft black mud. The soft mud has allowed the Drifter to depress into the mud.

6. A power pole was observed near a road adjoining the incident location (to the east of the Drifter) and another towards the West. The flight path of the Drifter was generally east-north-east towards the private airfield which places the flight path roughly perpendicular to the power lines. **[Images 8 and 9].**

Image 8: Overhead Drone photos taken at time of crash. Note yellow lines depicting location of powerlines relevant to Drifter.

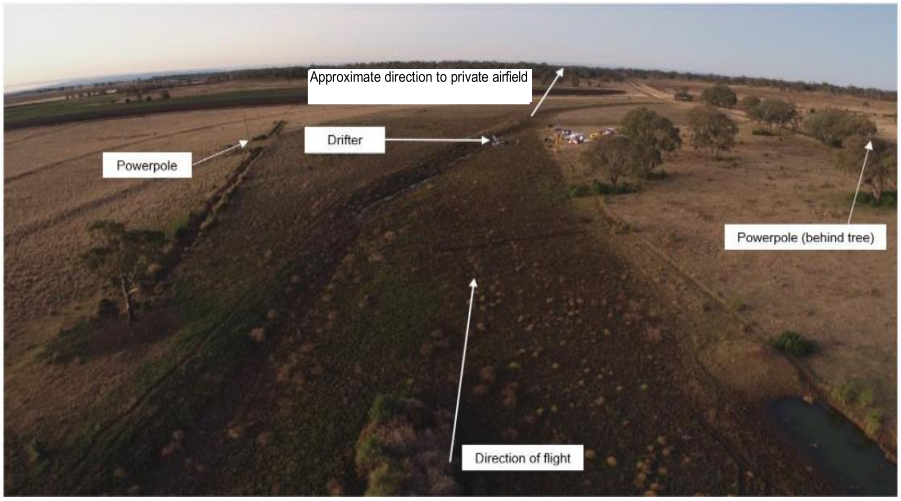

Image 9: Drifter insitu looking in a northerly direction.

7. Weather at the time of the crash was recorded at the flight's originating town (7km away). The wind direction was approximately 20 degrees at 6km/hr(3.5kn) ESE gusting to 7km/hr(4kn). Visual observations showed the skies were clear with minimal clouds observed. A witness observed the weather was brilliant for flying and remained great for the duration of his flights. The weather did not appear to have changed significantly by the time Police arrived at the scene.
8. The pilot was flying at a bearing of approximately 30 degrees at the time of the crash. The sun position at this time was at a bearing of approximately 320 degrees placing the sun approximately 70 degrees to the left of the pilot's flight path. The altitude of the sun was approximately 28 degrees above the horizon. Given the location of the sun, it is unlikely the sun would impact the pilot's vision.

Private Airfield

9. The private airfield was owned by the pilot with a small cottage and several large hanger type sheds located on the property. There are three grass runways for private use. The property is surrounded by rural farming land and bordered by two roads. There are lines of trees to the west along the road adjoining the incident location, to the south side of the hangers and to the southeast of the runways. There were no other hazards identified. It is not a registered airfield for aviation services and has no aerodrome charts associated to it.
10. The three runways are grass in construction. On 28 June 2022, Police attended and inspected the runways. They appeared in good condition and recently mowed. The runways are orientated at approximately 17-35 (unknown length), 02-20 (approx. 451m) and 01-19 (approx. 626m). There is no tower to control air traffic or radio facilities. A windsock was located on the southern end of runway 02- 20. The private airfield is approximately 1476 feet (450m) above sea level (ASL).
11. The pilot allowed friends to hanger planes at this location including the 2 witnesses who were also out flying from the private airfield on the day of the crash and reported no difficulties. There is information that pilots from other locations visit the airfield during flights and there were visitors from Caboolture on the day of the crash.
12. The private airfield is at approx. 450m ASL, and the crash location is approximately 400m ASL. Review of topography from crash location to the private airfield shows an inconsistent vertical grade increasing by 50m over approximately 4km with an average gradient of 1.25% or .71 degrees. **[Image 10].**

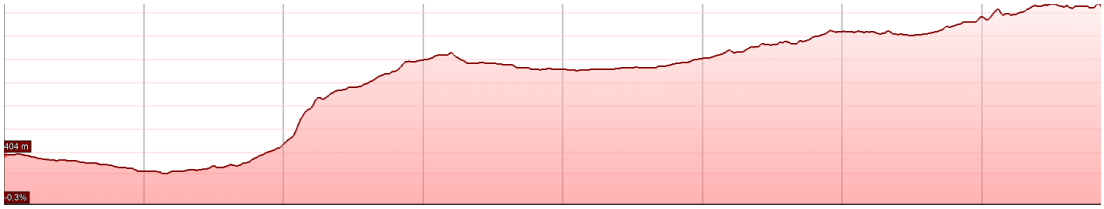

Image 10: Terrain profile from the crash site to the private airfield (Google Earth).

13. According to information obtained from Ergon Energy, there was no delay associated with isolating and earthing the feeder, in order to render the scene safe for first responders.

Aircraft inspection

14. An examination of the Drifter was undertaken at the scene and found to have extensive structural damage. It had come to rest upside down with the left side of the fuselage resting on the ground. It was facing roughly south westerly. Whilst extensively damaged, the Drifter had not broken up. There was no debris field suggesting all damage was done on impact and there and there appeared to be no evidence of in-flight structural failure. **[Image 11].**

Image 11: Drifter A-503 # post impact.

15. The instrumentation panel of the Drifter was inspected, and all gauges were viewed. None of the gauges which displayed the aircraft's air speed, altitude and other flight details were of the type which recorded and stored data. All gauges had reset to zero and provided no information regarding the flight of the aircraft prior to the crash.

16. Spars within the right wing were broken. The supporting spar attached to wire bracing above the centre of the wings was also broken. The sailcloth envelopes suffered minor tears consistent with impact. The wings otherwise appeared intact and in serviceable condition.
17. Examination of the ground around the Drifter showed impact marks with minimal or no movement of the Drifter to the final resting location. This examination was hampered by the condition of the ground which had been extensively disturbed by cattle movement through the soft ground (pre-crash). **Image 12** below indicates there was no horizontal movement of the propellers after they struck the ground. This lack of horizontal movement suggests there was no horizontal momentum of the Drifter at the time of impact with the ground.

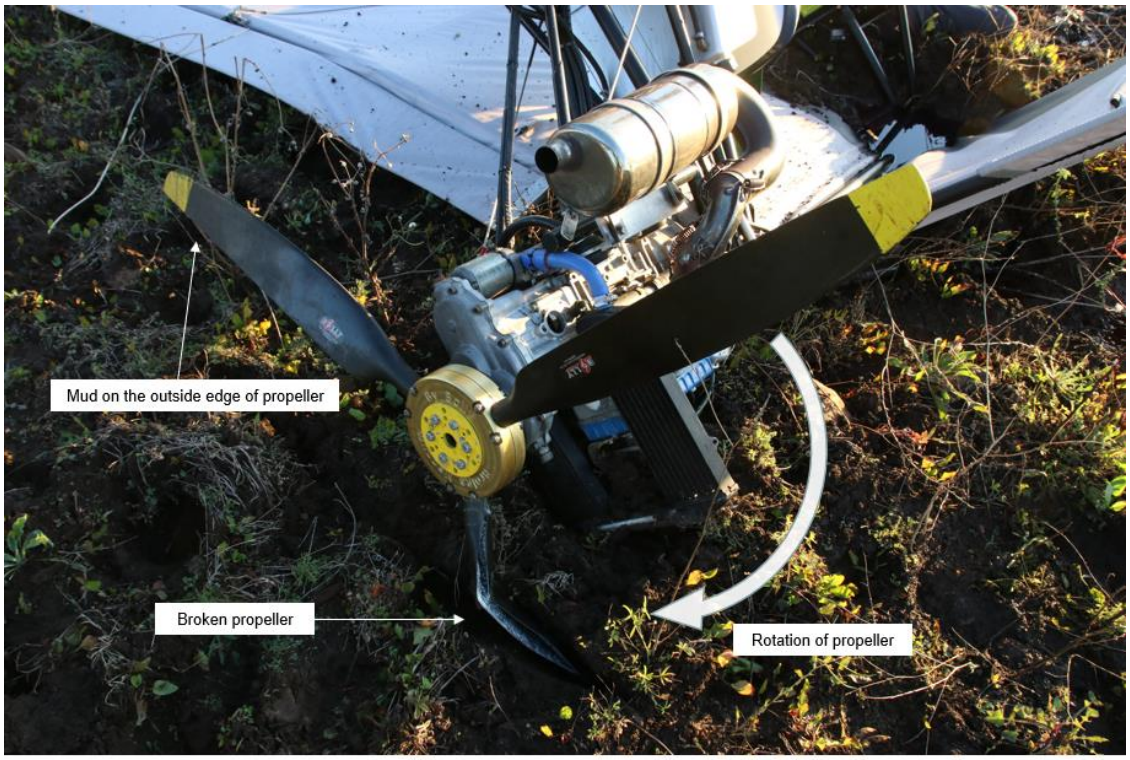

Image 12: Propeller showing damage and mud transfer with direction of rotation.

18. Examination of the propeller and ground nearby was completed. One blade had fractured mid-way along and was partially submerged in the soft ground. The second appeared undamaged, and the third had a light film of mud along the outer edges. This mud transfer appears to have come from the propeller carving a groove through the mud during impact. This damage and ground evidence indicates the propeller was rotating, and the engine was under power at the time of impact.
19. Closer inspection of the undercarriage located marks on both front tyres, wheel struts and undercarriage consistent with wire strike. Further inspection located points of possible arcing of electricity creating scorch marks. This evidence indicates the Drifter has struck the power lines with the front tyres, and the power lines have ridden up over the tyres becoming entangled on the wheel struts. [**Images 13, 14 and 15].**

Image 13: Left front wheel showing impact marks of power lines.

Image 14: Right front wheel showing impact marks of power lines.

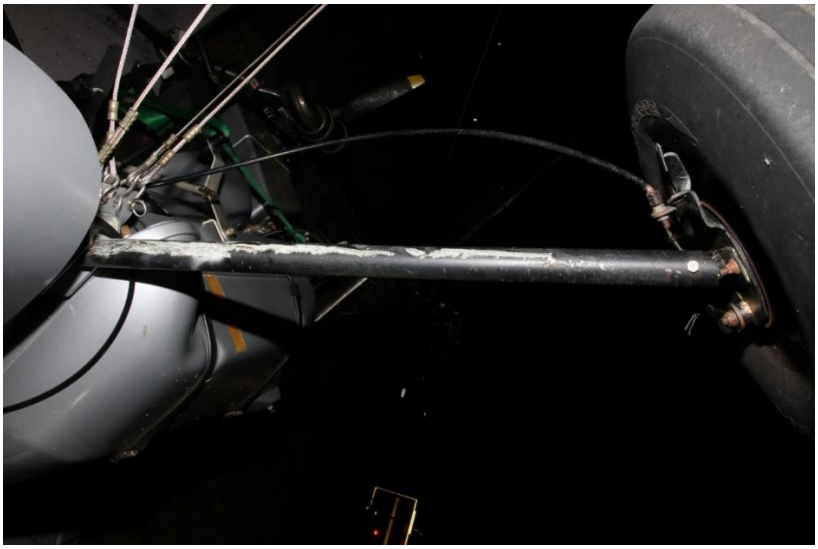

Image 15: Left wheel strut showing damage from power line strike.

20. Police arranged a crane to attend the scene to lift the Drifter using slings where it was further examined. To permit transport to a holding facility, the Drifter's wing assembly was disconnected from the fuselage. The attachment points were extensively photographed prior to and during disassembly.
21. All damage inspected at the scene appeared to be caused by impact damage forces during the crash.
22. During examination of the Drifter, two GPS tracking devices and an EPIRB were located in the cockpit. The two GPS devices were examined by an officer from the Electronic Evidence Unit. Data was able to be extracted from the Garmin GPS 72H which showed no data close to the date of the crash. Also examined was a Garmin ETrex GPS unit. No data could be extracted from this unit. It is unlikely this was used given the pilot was using the Oz-Runways mobile phone application. The EPIRB was not examined further.
23. As detailed above, a mechanical inspection took place on 5 July 2022. Overall, the Drifter was in serviceable condition. It was identified there were minor maintenance issues that could be addressed and unapproved modifications but no issues that would have contributed to the crash.

Pilot Licensing/Medical

24. The pilot was first issued with a private pilot licence by CASA on 2 September 1988. He was the holder of a RAAus Pilot Certificate issued on 30 May 1998 and his membership to RAAus was current until 22 August 2022. There is no specific medical certificate or requirement for a current CASA medical endorsement in order to hold a RAAus Pilot Certificate. The pilot's Pilot Certificate has the following endorsements:

- PAX - Passenger Carrying
- X - Cross Country
- R - RA-Aus Flight Radio
- HP - High Performance
- LP - Low Performance
- NW - Nose Wheel
- TW - Tail Wheel
- AP - In Flight Adjustable Propeller
- RU - Retractable Undercarriage
- GT – Glider Towing
- 2S - Two Stroke Engine
- LL – Low Level Endorsement
- HF - Human Factors

25. The RAAus FOM contains restrictions and conditions on Pilots Certificates. Section 2.01 (1) (c)-(f) states a persons must:
    a. be medically fit to the following standards: (1) Student or Converting Pilot and Pilot Certificate holders - A medical standard equivalent to that required to hold a private motor vehicle driver's licence in Australia (refer to Section 2.16 - Medical requirements).
    b. have undergone a flight review or equivalent flight check in accordance with this manual within the previous 24 months; and
    c. meet the pilot recency requirements in accordance with this manual.
26. Section 2.16 (1) of the FOM – Medical requirements stipulates that '*Applicants for the issue of a Certificate are required to have a health standard equivalent to that required for the issue of a private motor vehicle driver licence in Australia.*' The pilot was the holder of Queensland Open R, MR and UD licences. There were no conditions or restrictions on his Queensland Drivers licence and the licence was last renewed on 12 October 2017 and expired on 18 October 2022. RAAus confirmed that the pilot had a current biennial flight review and was appropriately qualified to operate the subject aircraft.
27. The pilot held a Low-Level Endorsement (LL) on his Pilots Certificate. Section 2.01 (8) of the FOM states "*In order to act as pilot in command and operate a recreational aeroplane below 500FT AGL a Pilot Certificate holder must:*
    a. *operate the aeroplane in accordance with the requirements set out in CAO 95.10, 95.32 or 95.55, under "Provisions relating to flight height limitations"; and*
    b. *hold a RAAus Low Level (LL) Endorsement.*"
28. Police obtained information from the pilot's wife that he wore glasses, but they were magnifiers only and not prescription.

29. Medical records were obtained from the pilot's treating General Practitioner (GP). These revealed a number of cardiovascular risk factors[6] such that a referral was made to the Toowoomba Hospital cardiac service on 17 March 2021.
30. Section 2.16(2) of FOM lists the medical requirements for the issue of a Pilots Certificate. Ordinarily a medical declaration is sufficient unless the pilot has particular medical conditions (e.g., Diabetes or a heart condition) where a doctor's statement is required. Whether any of his medical conditions required disclosure is outside the investigating officer's expertise.

Weight limits

31. At the time of the crash, the Drifter contained one occupant, being the deceased. The Drifter has a maximum take-off weight of 400kg (as per build specifications for this aircraft). The Drifter itself weighs 266kg leaving a useable payload of 134kg. The pilot weighed 89kg at autopsy. The weight of the deceased, (including clothing and flight logbooks), combined with a full fuel capacity of 32ltrs was within acceptable payload limits.
32. The owner's manual refers to a maximum pilot weight for the front seat of the drifter as 92kg to ensure appropriate balance of the Drifter. The pilot was within this limit.

Restraints and Safety Equipment

33. Evidence at the scene indicates that the pilot was wearing the four-point safety harness at the time of the crash. It was cut to allow him to be extracted from the Drifter. The passenger seat is fitted with the same harness. No issues were identified with the harnesses.
34. The pilot was also found to be wearing his aviation helmet which had to be disconnected to allow for him to be extracted as it was stuck in the mud. No apparent damage could be observed to the helmet.

Toxicology

35. The results of toxicological analysis were noted. Police attended the hotel and obtained CCTV footage. It showed the pilot arriving at 12:15 hours with 2 friends. After having 2 beers each and consuming meals, they depart at 13:16 hours.
36. The crash occurred at approximately 14:20 hours, approximately 1 hour after the pilot consumed his second beer. At the time of the crash the pilot had a blood alcohol level of 0.024%. The following table describes typical effects of alcohol on a person:

BAC Level	Generalized Dose Specific Effects
0.020-0.039%	**No loss of coordination, slight euphoria, and loss of shyness. Relaxation, but depressant effects are not apparent.**
0.040-0.059%	Feeling of well-being, relaxation, lower inhibitions, and sensation of warmth. Euphoria. Some minor impairment of judgment and memory, lowering of caution.
0.06-0.099%	Slight impairment of balance, speech, vision, reaction time, and hearing. Euphoria. Reduced judgment and self-control. Impaired reasoning and memory.
0.100-0.129%	Significant impairment of motor coordination and loss of good judgment. Speech may be slurred; balance, peripheral vision, reaction time, and hearing will be impaired.
0.130-0.159%	Gross motor impairment and lack of physical control. Blurred vision and major loss of balance. Euphoria is reducing and beginning dysphoria (a state of feeling unwell)
0.160-0.199%	Dysphoria predominates, nausea may appear. The drinker has the appearance of a sloppy drunk.
0.200-0.249%	Needs assistance in walking, total mental confusion. Dysphoria with nausea and vomiting. possible blackout.
0.250-0.399%	Alcohol poisoning. Loss of consciousness.
0.40% +	Onset of coma, possible death due to respiratory arrest.
Sourced from University of Notre Dame. https://mcwell.nd.edu/your-well-being/physical-well-being/alcohol/blood-alcohol-concentration/	

Image 16: Effects of alcohol at particular levels.

[6] Verified through the clinical records obtained from the pilot's GP under Form 25 compulsion.

37. The toxicology also shows the presence of Δ^9tetrahydocannabinol (THC) at a level of 0.003mg/L. Whilst this is evidence of the presence of THC, it does not necessarily indicate the pilot was affected by THC at the time of the crash. The effects of this level of THC varies from person to person depending on factors including length of time since exposure, prior consumption, mode of consumption and body weight. Typical effects are detailed in **Image 17** below:

Effects of cannabis	
Short Term Effects	Long Term Effects
• Mild euphoria, relaxation and reduced inhibitions • Perceptual alterations, including time distortion and intensification of ordinary experiences • Feelings of hunger • Panic reactions, confusion and feelings of paranoia – mainly reported by naïve users • Nausea, headache and reddened eyes • Increased heart rate for up to 3 hours after smoking • Dizziness, with impaired balance and coordination	• Physical dependence • Upper respiratory tract cancers, chronic bronchitis and permanent damage to the airways when smoked • Cardiovascular system damage • Mental health conditions including depression • Poor adolescent psychosocial development
Australian Institute of Health & Welfare – Australian Government 2022 https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/drug-types/cannabis	

Image 17: Effects of cannabis.

38. Section 4.01 (12) – Operations General of the RAAus FOM states:
"*Pilots must **NOT** consume any alcohol, drugs or other intoxicating substances within EIGHT (8) hours immediately prior to flying a recreational aeroplane.*"
39. A very common phrase used in the aviation fraternity is "*8 hours bottle to throttle*" and there are many aviation and legal forums that discuss this phrase. Dr David Newman (2004) completed a report "*Cannabis and its Effects on Pilot Performance and Flight Safety: A Review*." [7] Dr Newman notes that piloting an aircraft is a resource heavy attention and performance task and highly dependent on a person's working memory. Whilst recreational marijuana use may not result in performance difficulties, if other factors are present (such as bad weather or the like) performance may become significantly impaired. He further summarises the effects of marijuana use can be observed up to 24 hours post exposure with the pilot being unaware of ongoing impairment. He concludes:

    "While the literature concerning the effects of cannabis on pilot performance is limited in number, the conclusions drawn by the researchers are consistent. Cannabis causes impaired performance of complex tasks such as flying an aircraft. Flying skills deteriorate, and the number of minor and major errors committed by the pilot increase, while at the same time the pilot is often unaware of any performance problems. Clearly then, acute cannabis intoxication is incompatible with the safe operation of an aircraft.
    The exact duration of the cannabis carry-over effect and its interaction with other physiological stressors (altitude, fatigue etc) are largely unknown. While carry-over effects have been observed at 24 hours, the adoption of a 24-hour time limit between cannabis use and flying may well be insufficient. Some pilots may exhibit carry-over effects of cannabis more than 24 hours after a dose, depending on the circumstances and the level of task difficulty. An appropriate "cannabis-to-throttle" time remains to be determined, either scientifically or administratively (leaving aside the wider social and regulatory question of whether such a rule is acceptable or not)."

40. The investigating FCU officer considered the presence of alcohol and cannabis is concerning. Short term effects including euphoria, relaxation and reduced inhibitions may have contributed to the pilot's approach to flying and risk taking.
41. Police contacted the ATSB seeking information on the impact of cannabis use in aviation. Police were referred to Dr Judith Perl (Senior Pharmacologist from the Impaired Driving Research Unit, Traffic & Highway Patrol Command of the NSW Police Service). Dr Perl provided two summaries addressing impairments associated with low levels of alcohol and THC on psychomotor skills. Dr Perl summarises "*psychomotor functions are even more important in flying an aircraft and as can be seen from the alcohol references, the more complex the task the lower the BAC at which impairment is measurable*". Dr Perl's summary refers to divided attention tasks as those requiring a subject to complete two tasks concurrently, such as a central task and a peripheral visual search task. Piloting an aircraft would fall into this characterisation.

[7] Newman, David G (2004). *Cannabis and its Effects on Pilot Performance and Flight Safety: A Review*. https://www.atsb.gov.au/publications/2004/cannabis_pilot_performance accessed 19 April 2023.

42. Moskowitz and Fiorentina (2000)[8] note consistent impairment of divided attention tasks was measured at BAC levels of 0.001% to 0.009%.

Flight Tracking Data

43. The pilot was using the phone application, OzRunways which is based in South Australia. This subscription-based phone application is used extensively by recreational fliers and is approved by CASA. Police were unable to gain access to the pilot's phone as the PIN code was not known to family. Police obtained data from OzRunways which was imported into Google Earth for examination.
44. The accuracy of data within the OzRunways Application is impacted by the device recording the relevant GPS location and elevations. The pilot was using an iPhone SE (1st gen) Model A1723 which was first released in 2016 and is GPS enabled. Whilst the precise accuracy of data is not known, research indicates smartphones are typically accurate within a 4.9m radius.[9]
45. An examination of the flight data for the pilot's return flight towards the private airfield shows the following key points. It is important to note heights from OzRunway data are ASL: **[Image 18]**
    a. Track commences at 13:48 hours northwest of the departing town (The pilot may not have commenced the Application until airborne).
    b. At 14:06 hours the track shows a sharp left hand turn over a road. Topography data indicates the ground height at this location is between 370m and 380m ASL. Track data indicates a height of 396m ASL or approximately 16-26m AGL. This is consistent with a witness's estimation.
    c. At 14:09 hours, the pilot passes over a creek. Topography data indicates this creek is approximately 360-370m ASL. Track data shows the pilot at 365m ASL or about level with the ground.
    d. At about 14:11 hours, The pilot passes over a highway. Topography data indicates this highway is between 370m and 380m ASL. Track data shows the pilot at 396m ASL or 16-26m AGL.
    e. Just prior to the crash, at 14:13 hours, the pilot was at 396m ASL travelling at 109km/hr. Topography data indicates the crash location is between 400m and 410m ASL.
    f. At 14:15 hours, data records the pilot speed at 0km/hr and height 396m ASL.

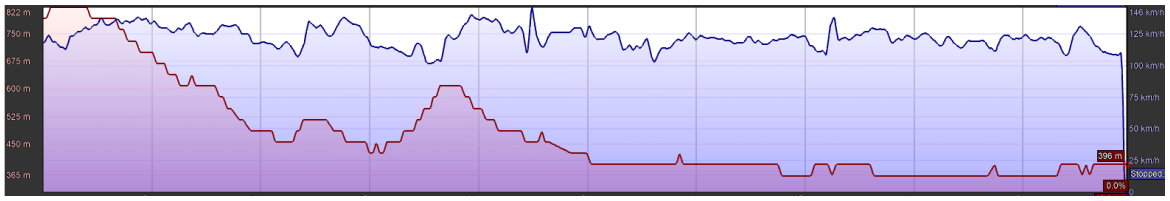

Image 18: Terrain/Speed profile for deceased's flight Pittsworth to 530 Malu Rd. Speed is top profile line and height is bottom profile line. Source: Runway Oz data imported into Google Earth.

46. Similar data was obtained from the pilot's friend, who flew a different path to the pilot that day. The following is relevant:
    a. At 14:03 hours, the friend completed a similar left hand turn over a road. Track data indicates a height of 426m ASL or 46-56m AGL.
    b. At 14:06 hours, he passes over a creek at a height of 396m ASL or 26-36m AGL.
    c. At 14:08 hours, he passes over a highway at a height of 519m ASL or 139-149m AGL.
    d. At about 14:15 hours, he has landed and is at the private airfield hanger at a height of 426m ASL. On approach to the private airfield, he flew over the hangers and then circled around to land on runway 20.
47. A random sample examination of the flight data for the pilot's flight data was obtained for the period 1 January 2022 until 26 June 2022 was completed. The data obtained consists of 50 flights over 177 days or approximately two flights per week. It is not possible to determine if he was flying the subject Drifter or his other plane, a Esqual VM-1. The follow data points were noted (AGL heights are approximate):
    a. 19/02/22 – 220km/hr approximately 27m AGL.
    b. 19/02/22 – 203km/hr approximately 56m AGL.
    c. 09/03/22 – 118km/hr approximately 7m AGL.
    d. 26/03/22 – 112km/hr between 2m-12m AGL. This data point is approximately the same location as the subject crash. The data shows a similar flight path to the day of the crash

[8] Moskowitz H & Fiorentino D. (2000). *A Review of Literature on the Effects of Low Doses of Alcohol on Driving-Related Skills*. National Highway Traffic Safety Administration report 809028, April 2000.
[9] (https://www.gps.gov/systems/gps/performance/accuracy/).

however the path deviates at the crash location with an increased height briefly over trees before descending again over a road.

e. 30/04/22 – 217km/hr approximately 17m AGL
f. 30/04/22 – 218km/hr approximately 7m AGL
g. 12/06/22 – 235km/hr approximately 15m AGL
h. 12/06/22 – 287km/hr approximately 77m AGL.

48. It was noted that these examples were not isolated, and many more examples of low level and high-speed flying can be observed from this data.

CCTV

49. CCTV footage was sought from nearby workplaces. The footage was informative and was analysed in conjunction with the OzRunway flight data from both the pilot and his friend. This demonstrated the height difference between the pilot and his friend when both crossed a certain point; the former being approximately 7m AGL and the latter approximately 166 AGL.

Logbook and Maintenance Manual

50. Police attended the private airfield following this crash and were able to locate several manuals and logbooks in relation to the pilot and the Drifter, but none appeared to be recent. The pilot's wife also looked for more documentation in their home but has been unable to locate any further documentation that may assist.
51. From the available documents, the following information was discerned:
    a. There appears to be multiple logbooks for the Drifter that overlap. The Drifter was fitted with a Rotax 582 engine without advising RAAus of the change. The approved engine for fitting to this aircraft is a Rotax 503 engine. The approved propeller for this aircraft is a four blade Aerofibre Industries Brogla however, a 3 bladed Bolly Optima was fitted.
    b. A pilot's logbook was located in the pilot's name. The first recorded entry is 1 June 1988 and appears to document his original training for ultralights. This logbook is quite detailed with him recorded as regularly flying in a variety of different aircraft to different locations.
    c. In August 1993, the pilot documented his first flight in a Drifter. There is a ten-year gap between 1999 and 2009 with no entries. In July 2010 there is a record of moving an aircraft to the private airfield. This appears to be the first reference to the pilot flying out of his own field. The last entry in this logbook appears to be on 9 November 2012 which was a re-certification flight in a Drifter. The pilot had recorded over 1100 hours in this logbook. RA-Aus confirmed he had over 2500 hours flying experience as at 2018. No further precise details of actual flying hours could be located.

History of Incidents Involving Drifter A-503

52. A review was completed of incidents documented by RAAus. Whilst four incidents involving Drifters are recorded, none involved powerline strikes. Two are mechanical failure, one was an incident during flight training with no further details and the other is the incident to which this report relates (no details are provided on the RAAus site).
53. A review of prior incidents documented on the website Aviation Safety Network involving Drifters striking powerlines was undertaken. The incidents documented were a combination of mechanical failure, pilot error and/or weather:
    a. On 18 January 2011, there was a fatality crash in a Drifter A503 which struck powerlines near Toorbeah (Goondiwindi). There are reports of engine failure possibly due to no fuel resulting in landing in an unfamiliar location. (Accident Drifter A503. 25-042, 18 Jan 2011 (aviation-safety.net).

    b. On 12 May 1989, a Maxair Drifter struck a powerline on final approach in Wakefield, Queensland. The wires were hidden in trees and the pilot was unaware of the lines. (Maxair Drifter, AUF 25-0312, Wakefield (45km NNW Isisford) QLD, 12 May 1989 | ATSB)

    c. On 14 September 1988, a Maxair Drifter struck powerlines on final approach in Coromar (Dalby) Queensland. The pilot had not been briefed about these powerlines and no pre-landing inspection was completed. (Maxair Drifter 582, 32 km NW of Dalby, QLD, 14 September 1988 | ATSB)

    d. On 10 July 1988, an Ausflight Drifter A-503 struck powerlines on final approach following an engine failure in Mount Larcom, Queensland. The pilot reported difficulty seeing the powerlines against the terrain and the supporting poles were 1.5 kilometres apart and hidden by terrain. (Ultralight Drifter A-503, 25-2020, Mount Larcom QLD, 10 July 1988 | ATSB.

e. On 29 August 1987, a Maxair Drifter struck a single powerline on approach at Meriman Station, Queensland. The pilot was unaware of the powerline. (Drifter XP 503, Not Registered, Meriman Station (150 km SW Longreach) QLD, 29 August 1987 | ATSB)

f. On 3 June 1987, a Maxair Drifter struck a single powerline near Hungerford, Queensland. The pilot had discussed the presence of this line previously and was flying at low level. The wire was of small gauge and not easily visible from air. (Maxair Drifter 503, Not Registered, Hungerford QLD, 3 June 1987 | ATSB)

g. On 31 May 1987, a Maxair Drifter struck powerlines in Taylors Arm, New South Wales. The pilot was making glide approach forced landing following engine failure and struck powerlines. (Maxair Drifter XP503, Not Registered, Taylors Arm NSW, 31 May 1987 | ATSB.

Opinion of the Cause

54. According to the pilot's logbook, he had been flying out of the private airfield since 2010. A review of the data from OzRunway Application for the period 1 January 2022 until 20 June 2022 shows he recorded 50 flights. This is a period of 176 days indicating he flew every 3.5 days on average and could only be classed as being very familiar with the terrain around the private airfield.
55. This Drifter would be classed as an Ultralight and as such CAO 95.55 is relevant. Section 9.1 (f) states "*a relevant aeroplane must not be flown at a height of less than 500 feet AGL unless the conditions in paragraphs 10.1 to 10.3 are satisfied.*"
56. The OzRunways data details a low-level flight being conducted by the pilot for much of the return flight towards the private airfield. RAAus and CASA Regulations detail the requirements when low level flights are permitted. Whilst low level flying is permitted during take-off and landing, the pilot was still 4km from his landing site and was required to increase his overall height by at least 50m to reach the elevation of the private airfield. There is no evidence indicating he had permission to be low level flying over the location of the crash. Low level flights of the nature being completed by the pilot are contrary to those permitted under CAO and RAAus Regulations.
57. With the flight path of the Drifter being roughly perpendicular to the power lines, it is possible the pilot was unable to see the power lines due to them blending into the ground. The power poles are likely to be well outside his focus area.
58. Ultimately, it is the opinion of the investigating FCU officer, that the significant contributor to the cause of the crash was the low-level flying being conducted by the pilot. It is possible he was mildly affected by the combination of alcohol and cannabis at the time.
59. Given the circumstances, no charges are being considered by Police, nor are any recommendations made.
60. However, the following areas of concern were highlighted for potential consideration by governing agencies:
    a. *Alcohol and drugs*

       Based on the clinical evidence obtained by the investigating FCU officer, expert review may need to be undertaken on the effect of alcohol and drugs to inform on stipulated timeframes between exposure and safe participation in flying activity.

    b. *Documentation*

       Section 2.02 (1) of the RAAus FOM states that Certificate holders are required to maintain an up-to-date Pilot Logbook which should contain a record of all RAAus flight times.

       Section 11.1 of the RAAus Technical Manual (V 4.1) details the maintenance policy. Section 3.1.2 of this policy states "*Having completed any maintenance on an aircraft, the owner is to immediately detail the actions carried out in the aircraft maintenance logbook in accordance with Section 12.5 of this manual.*" Section 12.5 provides guidance of the content of entries in logbooks.

       Section 12.1 (1.1) of the RAAus Technical Manual states "*A daily inspection must be carried out and recorded prior to the first flight of each day. Pilots should also record hours, landings and oil uptake and any other details as required by the aircrafts system of maintenance. The daily flight record forms part of the aircrafts maintenance history and may aid in identifying maintenance concerns.*" RA-Aus provide example logs and daily inspection checklists for use by pilots.

       This case highlights a lack of adherence to complete the pilot and maintenance logbooks. Whether this is unique to this investigation or more widespread is unknown.

Conclusion

After considering the material obtained during the coronial investigation, I consider that I have sufficient information to make the necessary findings in relation to the pilot's death and that an Inquest is not required.

I accept the forensic pathologist's opinion as to the cause of death and find that the cause of the pilot's death was:

1(a) Traumatic asphyxia, *due to, or as a consequence of*

1(b) Light aircraft collision (pilot).

I accept the comprehensive investigation and analysis undertaken by RAAus and the FCU. Consequently, I find that during the course of a solo recreational flight, the Drifter struck power lines and crashed into the ground, causing fatal injuries to the pilot. I find the cause of the crash was as a result of pilot error, namely low-level flying. The available evidence is insufficient to make positive findings of the impact of alcohol and drugs detected on toxicological analysis, on the pilot's fitness to fly on the subject flight. Tragically, the low-level flying associated with this case is not isolated, as past history (for the pilot and other like crashes and near misses) has shown. In this respect, I note the actions taken by RAAus to highlight the hazards associated with these activities. It is hoped that the reinforcing these issues to the aviation community, and publication of these findings will have the effect of preventing deaths in similar circumstances in the future.

I extend my condolences to the pilot's family and friends for their loss.

Findings required by s.45

Identity of the deceased – A pilot

How he died – During the course of a solo recreational flight on 26/06/2022, the Drifter struck power lines and crashed into the ground, causing fatal injuries to the pilot. I find the cause of the crash was as a result of pilot error, namely low-level flying. The available evidence is insufficient to make positive findings of the impact of alcohol and drugs detected on toxicological analysis, on the pilot's fitness to fly on the subject flight.

Place of death – Near a small rural town in regional Queensland, AUSTRALIA

Date of death– 26/06/2022

Cause of death –

1(a) Traumatic asphyxia*, due to, or as a consequence of*
1(b) Light aircraft collision (pilot)

I close the investigations.

Carol Lee
Coroner
CORONERS COURT OF
QUEENSLAND
18 June 2024